

Vector Components

Draw each of the following vectors on a Cartesian coordinate system and break them down into vertical and horizontal components.

a) $\vec{d} = 30 \text{ m [E}30^\circ\text{N]}$

b) $\vec{v} = 100 \text{ m/s [W}40^\circ\text{N]}$

c) $\vec{a} = 23 \text{ m/s}^2 \text{ [S}16^\circ\text{W]}$

d) $\vec{F} = 30 \text{ N [W}29^\circ\text{S]}$

e) $\vec{T} = 39 \text{ N}\cdot\text{m [N}15^\circ\text{W]}$

Vector Addition by Components

Add the following vectors using the component method.

1. $\vec{d}_1 = 25 \text{ cm [W40°N]}$, $\vec{d}_2 = 50 \text{ cm [E25°N]}$

2. $\vec{v}_1 = 35 \text{ m/s [S37°W]}$, $\vec{v}_2 = 62 \text{ m/s [N15°E]}$

3. $\vec{F}_1 = 200 \text{ N [E]}$, $\vec{F}_2 = 150 \text{ N [E60°S]}$

4. $\vec{F}_1 = 140 \text{ N [E]}$, $\vec{F}_2 = 190 \text{ N [W40°N]}$, $\vec{F}_3 = 250 \text{ N [W15°S]}$